

RD-A195 627

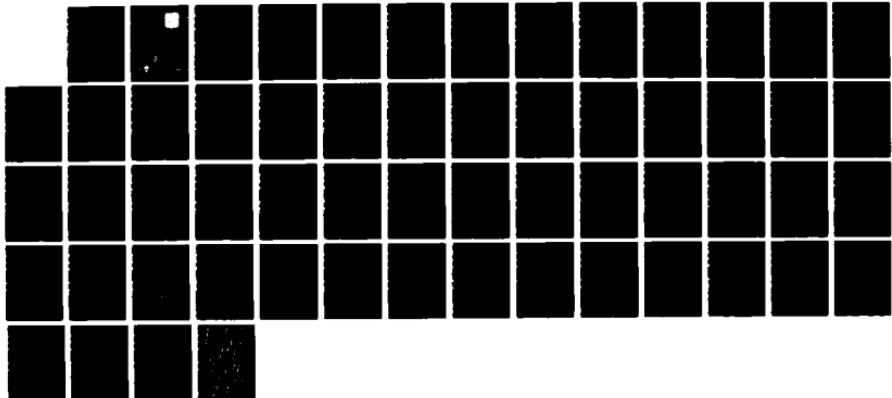
AIR MANEUVER: A COMPETITIVE STRATEGY NOW FOR THE
OPERATIONAL LEVEL FIGHT(U) ARMY WAR COLL CARLISLE
BARRACKS PA C M BURKE ET AL. 30 MAR 88

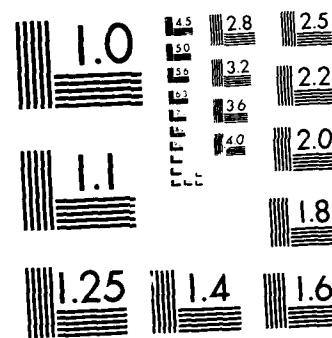
1/1

UNCLASSIFIED

F/G 1/2

NL





627
195
AD-A195
STUDY

PROJECT

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.

AIR MANEUVER: A COMPETITIVE STRATEGY
NOW FOR THE OPERATIONAL LEVEL FIGHT

BY

LIEUTENANT COLONEL CHARLES M. BURKE, AV
LIEUTENANT COLONEL J. MICHAEL PULLIAM, AVDISTRIBUTION STATEMENT A: Approved for public
release; distribution is unlimited.S DTIC
ELECTED
JUN 07 1988
G-2
D

30 MARCH 1988



U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Air Maneuver: A Competitive Strategy Now for the Operational Level Fight		5. TYPE OF REPORT & PERIOD COVERED Joint Study Project
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) LTC Charles M. Burke LTC J. Michael Pulliam		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army War College Carlisle Barracks, PA 17013		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE March 88
		13. NUMBER OF PAGES 54
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution is unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Every year the Soviet Union modernizes a conventional force the size of the active heavy U.S. ground forces. The Soviet Union and the Warsaw Pact outnumber NATO in conventional forces better than three to one. In 1987, Secretary of Defense Caspar Weinberger initiated studies in "Competitive Strategies" - strategies designed to leverage enduring U.S. strengths against inherent Soviet weaknesses - to enhance deterrence and security of U.S. and NATO conventional forces. To date, the strategies have focused on emerging technologies, most of which are five to ten years from being fielded. It is important for the U.S. to		

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

maintain its technological edge, but we must not overlook current technologies, organizations, and capabilities. The concept of AIR MANEUVER is just such a capability. Since the early sixties, the U.S. has led the world in helicopter and Airmobile employment, mostly to enhance ground paced maneuver. As General von Senger writes, the world stands on the threshold of the "third tier of mobility" - that of the combat air vehicle oriented towards setting high tempo maneuver in the air. The ability to develop high tempo maneuver to operational depths exists in most Army Corps' today, but has yet to be exploited. The purpose of this paper is to explore the concept of air maneuver as a competitive strategy aimed at enhancing the operational level fight with high potential for payoff now. It's time we maximized our capabilities in this area before the Soviets show us how.

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

USAWC MILITARY PROGRAM STUDIES PAPER

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.

AIR MANEUVER: A COMPETITIVE STRATEGY NOW FOR THE OPERATIONAL LEVEL FIGHT

A JOINT STUDY PROJECT

by

LTC Charles M. Burke, AV

and

LTC J. Michael Pulliam, AV

Colonel Frank J. Gall, Jr.
Project Adviser

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

U.S. Army War College
Carlisle Barracks, Pennsylvania 17013
30 March 1988

Accession For	
NTIS	CRA&I
DTIC	TAB
Unannounced	
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	



ABSTRACT

AUTHORS: Charles M. Burke, LTC, AV & J. Michael Pulliam, LTC, AV

TITLE: Air Maneuver: A Competitive Strategy Now For The Operational Level Fight

FORMAT: Joint Study Project

DATE: 30 March 1988 PAGES: 51 CLASSIFICATION: Unclassified

Every year the Soviet Union modernizes a conventional force the size of the active heavy U.S. ground forces. The Soviet Union and the Warsaw Pact outnumber NATO in conventional forces better than three to one. In 1987, Secretary of Defense Caspar Weinberger initiated studies in "Competitive Strategies" - strategies designed to leverage enduring U.S. strengths against inherent Soviet weaknesses - to enhance deterrence and security of U.S. and NATO conventional forces. To date, the strategies have focused on emerging technologies, most of which are five to ten years from being fielded. It is important for the U.S. to maintain its technological edge, but we must not overlook current technologies, organizations, and capabilities. The concept of AIR MANEUVER is just such a capability. Since the early sixties, the U.S. has led the world in helicopter and Airmobile employment, mostly to enhance ground paced maneuver. As General von Senger writes, the world stands on the threshold of the "third tier of mobility" - that of the combat air vehicle oriented towards setting high tempo maneuver in the air. The ability to develop high tempo maneuver to operational depths exists in most Army Corps' today, but has yet to be exploited. The purpose of this paper is to explore the concept of air maneuver as a competitive strategy aimed at enhancing the operational level fight with high potential for payoff now. It's time we maximized our capabilities in this area before the Soviets show us how.

TABLE OF CONTENTS

ABSTRACT.....	ii
CHAPTER I.	
I. INTRODUCTION.....	1
II. THE THREAT.....	3
III. COMPETITIVE STRATEGIES.....	7
Background.....	7
Recent Initiatives.....	8
New Technologies.....	9
A New Strategy.....	11
IV. AIR MANEUVER - THE THIRD TIER	
OF MOBILITY.....	14
V. AIRLAND BATTLE AND AIR MANEUVER	
Initiative.....	20
Agility.....	20
Depth.....	22
Synchronization.....	24
VI. AIR MANEUVER AS A COMPETITIVE	
STRATEGY.....	27
Operational Fighting Assets.....	28
How To Fight.....	35
VII. CONCLUSION.....	45
Changing The Mindset.....	45
Aviation as a True Maneuver Arm.....	46
BIBLIOGRAPHY.....	49

AIR MANEUVER: A COMPETITIVE STRATEGY NOW
FOR THE OPERATIONAL LEVEL FIGHT

CHAPTER I

INTRODUCTION

Recent advances in rotary wing systems design coupled with associated technological enhancements have added significant new capabilities to the Army's fleet of attack, scout and lift helicopters. Fielding this relatively new family of advanced aircraft systems has brought marked improvements in speed, agility, firepower, survivability, and ability to operate at night and in marginal weather. What do these new capabilities mean in the context of Airland Battle doctrine, and how can they be optimized? The answers to these questions lie partly in understanding that these new aircraft are not merely product improvements of older systems. They represent revolutionary change in the third dimension. The commander now has the wherewithal to apply the strengths of air maneuver - speed, agility, ability to mass quickly, extended range weapons, etc. - against the adversary's weaknesses; the commander can set tempo, shape the battle, and turn inside the enemy commander's decision cycle. And he can do this twenty-four hours a day in nearly all kinds of weather. The capabilities of these new helicopters offer maneuver potential far greater than ever before in the close and rear battles. But perhaps at the corps level, where

operational intent is translated into tactical action, we have not recognized this new potential. Through the medium of air maneuver, the Corps Combat Aviation Brigade can now provide the corps commander the capability to fight the deep battle with flexibility and precision. The significant advantages which accrue from these enhanced capabilities, particularly the ability to strike at operational depths, make air maneuver an immediately viable competitive strategy at the operational level of warfare. Moreover, the concept of air maneuver in all three battle areas (close, deep, and rear) gains credence and validity as the projected pace of modern warfare continues to increase. As in previous wars of this century, maneuver pace in the next conflict will be determined largely by the most highly mobile fighting platform available to the commander. In the near term, that platform will fight in the third dimension - the dimension of air maneuver.

CHAPTER II

THE THREAT

Consider that each year the Soviets modernize a force the size of the active heavy U.S. ground forces; and every two years they modernize the equivalent of NATO's armor and mechanized forces in the Central Region.¹

General Secretary Gorbachev appears committed to a vigorous program to modernize Soviet military forces, as were his predecessors. Over the past decade, Soviet conventional force modernization has increased in quantity while improving in quality. This protracted buildup prompted the U.S. Defense Department to note recently that, "pursuit of this [Soviet] policy has resulted in the accumulation of military equipment far in excess of what one might reasonably expect for defensive purposes."²

As Intermediate Nuclear Forces (INF) in Europe are eliminated, considerable attention will be focused on the significant imbalance in East-West conventional forces. In a published threat assessment in 1986, Secretary of Defense Caspar

Weinberger stated "The continued growth of Soviet and Warsaw Pact nuclear and conventional capabilities...has led to an Alliance-wide consensus that NATO's conventional defenses need to be upgraded."³

The Warsaw Pact already outnumbers NATO forces in Central Europe. Moreover, in a conventional attack they will attempt to enhance this numerical advantage at the point of initial contact by massing their forces for a breakthrough. Once NATO lines have been ruptured, Soviet and Warsaw Pact forces hope to exploit these successes by employing follow-on echelons to strike deep into NATO's rear. The successful Soviet scenario calls for execution with such speed and overwhelming power that the NATO Alliance would not be able to defend conventionally nor react in sufficient time to gain consensus for nuclear release and execution of their flexible response strategy. NATO must be capable of defeating precisely this threat if the strategy of deterrence through flexible response is to remain viable. The task of denying Soviet success in this instance lies with NATO's tactical and operational level commanders. General Bernard W. Rogers, former SACEUR has stated that, " simultaneous attack of the first and succeeding Soviet echelons is the best way to defeat a Warsaw Pact invasion of Western Europe."⁴ At the operational level, this means identifying, fixing, and fighting Operational Maneuver Groups (OMG) before they can join the main fight. Ideally, these attacks on succeeding echelons would enable NATO forces to handle the close battle, thereby affording

enough time to mobilize reserves and build sufficient conventional strength for counteroffensive operations.

Given current force imbalances, stopping initial Soviet penetrations and moving ultimately from defensive to offensive operations presents a formidable task. We will be able to do so only through superior skill and innovation on the battlefield. Commanders must expertly -- almost flawlessly -- execute doctrine and tactics. But against a numerically superior foe, this may not be enough. We must seek to identify the enemy's strengths and weaknesses and understand thoroughly the way he intends to fight. Only then can we avoid his strengths, attack his weaknesses, and gain the advantage that will enable us to win outnumbered. We must take advantage of our superior technology and apply it in innovative ways to exploit enemy vulnerabilities. This leads us to the concept of Competitive Strategies.

ENDNOTES

1. William O. Staudenmaier, COL., "Deep Strike in U.S. and NATO Doctrine", Defense and Foreign Affairs, February 1987, p. 29.
2. U.S. Department of Defense, Soviet Military Power, 1987, p. 21.
3. Caspar W. Weinberger, Annual Report to the Congress Fiscal Year 1986, p. 225.
4. William O. Staudenmaier, "Deep Strike in US and NATO Doctrine," Defense & Foreign Affairs, February 1987, p. 30.

CHAPTER III

COMPETITIVE STRATEGIES

In 1987 Secretary of Defense Caspar Weinberger initiated a study in "Competitive Strategies" to look at ways of leveraging enduring U.S strengths against inherent Soviet weaknesses, "...[to] exploit [their weaknesses], thereby rendering Soviet military power less potent over time." The objective of the Competitive Strategies Initiative (CSI) is to enhance deterrence and security by pitting strengths against weaknesses as opposed to strength against strength, as is required by forward defense.¹

Background

Competitive Strategies seek to exploit areas of high leverage gain, which would result in new military capability. The outcome of a successful Competitive Strategy would present the Soviets with a difficult choice between shifting more resources to overcome our newly developed capability, or to forego certain offensive choices because of their inability to overcome the U.S. defensive strength.

Thus, this "chess move methodology" is designed to identify, develop, and prioritize U.S. defensive efforts towards shaping U.S. - Soviet superpower competition into more stable and safer

areas of contention.²

Competitive Strategies can be pursued through new technologies, new systems, operational concepts, or organizational changes. They also can be manifested in a more efficient way of utilizing current resources and personnel.

Recent Initiatives

In July 1987, the first Competitive Strategies Task Force convened to examine mid-to-high intensity conventional conflict in a European global war context.³ Their recommendations focused on the U.S. advantages in data automation and processing, target acquisition, and intelligence fusion and dissemination. Exploiting these advantages against recognized Soviet weaknesses can provide NATO more effective use of conventional capabilities already in use and serve as a focal point for developing future technologies and strategies.

Highlights of the four proposals are as follows:⁴

-- Countering Soviet Air Operations: The task force recommended that NATO, led by the United States, enhance its offensive capabilities against Soviet sortie generation by developing a phased attack on the Soviet's main operating bases and air infrastructure led by unmanned aircraft. From a defensive air perspective, the task force recommended measures to strengthen the integrity of NATO's air and ground operations.

-- Countering Soviet Penetration of NATO Forward Defenses: The task force recommended developing an asymmetric force capability comprised of an integrated network of long-

range, mobile weapons platforms, and target acquisition and command and control assets capable of engaging Soviet mobile targets beyond the range of friendly artillery and multiple launcher rocket systems.

-- Stressing the Warsaw Pact Troop Control System: The task force recommended frustrating Soviet tactical operations by blocking preplanned options. This would force their communications to the operational level where a replanning capability exists. By use of direct attack, special operations, and deception, NATO could counter the Pact's ability to devise and execute operational responses.

-- Countering Soviet Global and Multi-theater Operations: Finally, to exploit Soviet aversions to a multi-theater, protracted conflict, the task force recommended developing an offensive warfighting capability for conducting large-scale joint and combined conventional offensive military campaigns.

New Technologies

All four proposals center on new technologies in stand off conventional missiles, unmanned aerial vehicles, precision guided "smart" munitions, improved intelligence gathering systems, automatic data processing, high speed electronics and communications, and improvements in low-observable technology.

Some of the hardware envisioned to take advantage of these new technologies include:

- RPV Various unmanned and remotely piloted vehicles designed for target acquisition, laser designation, and

intelligence gathering.

- JSTARS

The Joint Surveillance/Target Attack Radar System; a joint USAF/Army airborne radar system mounted in an Air Force KC-135 type aircraft designed to provide target acquisition and surveillance for both Army and USAF units.

- ATACMS

The Army Tactical Missile System designed to be fired on the MLRS platform giving the operational level commander a deep fire capability.

- PGM

Precision guided artillery, munitions and submunitions such as COPPERHEAD (155mm laser guided projectile) and SADARM (sense and destroy armor munition).

However, it is an open question whether technological superiority can be used indefinitely to counter numerical superiority. Admiral Crowe, current Chairman of the Joint Chiefs of Staff, warns that, "buying new technologies at the expense of existing forces is always tempting, but if practiced over time can lead down the path of `structural disarmament'."⁵

Although there are several systems in various stages of development, testing, and production, the recently revised budget cancelled funding for COPPERHEAD, SADARM, and RPV. Funding was also reduced for JSTARS and ATACMS, but development in those systems continues.

Technologies of this kind are supposed to be the bedrock of the competitive strategies doctrine. It is evident the US must do much more funding, research and realistic testing before these new systems are fielded. Despite Western advantages in long-range weapons delivery, detection of targets and terminal

guidance, there is at least some question whether these programs will work as advertised and stay within current budget estimates.

Aviation Week & Space Technology recently noted "It would be terrible ...to have a strategy betting on technologies five or ten years out that don't work. Then you would be turning the leverage arguments against yourself, with competitive strategies for us turning into competitive strategies for the bad guys."⁶

A New Strategy

Hardware and new technologies are only part of the equation. We need to pursue advantages across the full spectrum of military conflict to include new procedures, tactics, doctrine, and organization. Former Secretary of Defense Weinberger advised in his 1988 report to Congress:

It is relatively easy to apply the concept of competitive strategies in developing new technologies. To achieve the maximum leverage from these technologies, however, we must also develop operational concepts.

Indeed, in many instances, we should be able to gain an advantage by developing a new concept of operations that employs existing systems.⁷

Thus Secretary Weinberger challenges us to make more imaginative uses of current assets. The capabilities of the

current fleet of advanced technology rotary wing systems have yet to be exploited fully, even though these systems are ideal sources for new developments in operational concepts and doctrine. The strengths of these helicopters - speed, agility, flexibility, survivability, range, optics, and firepower - can be applied against weak points deep in the enemy's rear, such as command and control nodes, POL and ammunition storage areas, aircraft concentrations, artillery formations, and tanks or armored vehicles in assembly areas or on road marches. Through applied combat power, deep air maneuver extends the corps commander's influence in space and time, providing him the capability to execute tactical action that directly supports operational intent. As a competitive strategy, the use of air maneuver to attack deep keeps the enemy off balance by presenting him with yet another problem to counter. The AH-64 equipped Corps Aviation Brigades represent a current system and organization for which doctrine has yet to be maximized - a doctrine of air maneuver. This is a competitive strategy worthy of study and development.

ENDNOTES

1. Casper W. Weinberger, Annual Report to the Congress
Fiscal Year 1988, p. 66.
2. Frank C. Carlucci, Annual Report to the Congress, Fiscal
Year 1989, p. 115.
3. Ibid., pp. 115-118.
4. Ibid., p. 117.
5. Paul Mann, "Competitive Strategies Doctrine Pushed By
Defense Dept. for Post-INF Planning," Aviation Week & Space
Technology, p. 29.
6. Ibid.
7. Weinberger, p. 68.

CHAPTER IV

AIR MANEUVER - THE THIRD TIER OF MOBILITY

To appreciate fully the potential offered by the concept of combat air maneuver, one must realize that superior mobility alone often determines the outcome of battles and campaigns. At the outbreak of World War II, warfare was primarily a static affair, with maneuver restricted to small movements of truck mobile infantry forces or horse mounted cavalry. Large scale maneuver was conducted at foot mobile pace. Then during World War II, the German Army took advantage of a much improved weapons system -- the tank. They employed composite tank divisions at blitzkrieg speeds to outmaneuver a less mobile foe. Using large, highly mobile tank units to thrust deep into enemy territory and to set maneuver pace, the Germans added a new dimension to warfare. This new dimension was referred to as the "second tier of mobility." Indeed it proved to be decisive for the Germans until the Allies learned the art of maneuver warfare in this second tier.

Mobility of forces on the battlefield has continued to increase since World War II. However, it appears that technology can longer produce further significant increases in ground force mobility due to physical limitations imposed by the earth's surface.

Restrictions imposed by terrain and manmade obstacles will

not allow modern tanks and fighting vehicles to achieve the speeds of which they are theoretically capable. As ground combat systems reach these limits, the technical capabilities of such systems will have less and less impact on relative agility.¹

Therefore, to realize any notable increase in mobility, we must break contact with the ground and move into the third dimension. At the same time, we must stay in close proximity to the earth's surface in order to remain in the realm of ground combat. Such is the operating domain of the helicopter. Unencumbered by terrain and fixed obstacles on the earth's surface, the speed of the helicopter elevates us to another level in maneuver warfare. This advantage in speed and agility is so pronounced that General von Senger und Etterlin and other respected military strategists have declared that we are now at a point in history in which warfare is moving into a "third tier of mobility" - that of the helicopter or air maneuver.²

Our strategic task is to discover how best to optimize on the battlefield the superior mobility that the helicopter offers. In this regard it is instructive to consider the advantages afforded by rapid combat maneuver in the third dimension.

Of particular significance is the ability of combat aviation units to mass quickly for concentrating fires. The speed and range of modern rotary wing platforms enable commanders to keep their units dispersed for security and intelligence denial; but, at a given time and place, they can mass quickly on converging axis' to achieve synchronization and surprise. Moreover, the

process can be repeated in rapid succession, keeping the enemy off balance and in a reactive posture. Using combat aviation in this manner can enable the ground commander to seize and maintain the initiative, to set maneuver tempo, and ultimately to dictate the terms of battle. In order to achieve this end, we must think of aviation as a true combat maneuver arm and capitalize on the unique capabilities it offers by integrating aviation fully into the scheme of maneuver.

In most instances, the helicopter should be integrated into the fight based on its capability to maneuver, not the maneuver capability of the ground system. Currently, the most mobile ground system -- usually the tank or infantry fighting vehicle -- determines maneuver tempo of the close-in fight. The helicopter normally is integrated into the fight based upon this ground-paced maneuver tempo. As a result, the two greatest attributes of the helicopter - speed and agility - are often negated. Thus, the commander's ability to establish high tempo operations through air maneuver is lost. This is not to say that the dominant tempo of operations in the close fight always should be air-paced, or that Army aviation cannot, or should not, operate in support of ground-paced maneuver. Certainly it can, should and will. But, used properly, the tremendous mobility of the helicopter will enable the commander to mass combat power quickly, strike enemy weaknesses, and to increase maneuver tempo when it is advantageous to do so.

Currently the enemy enjoys essential parity in quality and

vast superiority in quantity of ground maneuver systems. Given this, it is unlikely that one of these ground systems could "outmaneuver" the other, at least not consistently. The ground maneuver equation, then, yields strength against strength. The idea that we can apply the superior mobility of the helicopter (strength) against a less mobile ground system (weakness) is fundamental to the competitive strategy proposed in this paper. By analogy, consider that our military force employment doctrine recognizes that foot mobile infantry are no match for highly mobile mechanized or armored units. Although there are other reasons, this mismatch is attributed primarily to the disparity in mobility between these units. We can easily posit a similar maneuver mismatch between ground and air systems. In fact, "ground maneuver elements bear an analogous relation to the air maneuver force which supporting foot infantry formerly bore to attacking mechanized forces."³

So far, superior mobility of the helicopter to gain a maneuver advantage appears germane only to the close-in, or tactical fight. Certainly the concept is valid at the tactical level. But, significantly, the concept of air maneuver may be better suited for the operational level fight. Indeed, the quantum technological leap and attendant increases in firepower, speed, range, and survivability of the Army's new family of helicopters give them the requisite capabilities to function in an operational role. Their ability to carry the fight deep into enemy territory, to do it quickly, repeatedly, and at unexpected

times and places, provide the operational level commander with a highly credible AirLand Battle weapon. The fact that this represents a relatively new capability presents the enemy with a broader, more complex threat. This may cause him to alter the way he fights. The competitive strategy of deep air maneuver is to make him do precisely that.

In summary, the Germans used innovation, initiative, and the superior mobility of the tank to introduce a new concept to modern warfare. Similarly, we have developed a significant new capability in advanced technology rotary wing systems. How we use that capability may well be the key to success on the modern battlefield. In Race to the Swift, Richard Simpkin asserts that "operational use of the helicopter can have a far more revolutionary impact on manoeuvre warfare than ever the track did."⁴ Accordingly, we should continue to explore innovative ways to use the speed, agility, firepower, and rapid massing and dispersing capabilities of the helicopter.

ENDNOTES

1. Wilson A. Shoffner M.G., Employment of Combat Aviation, p. 8.
2. BG. Rudolph Ostovich III, "AirLand Battle: Dramatic Changes in Emerging Aviation Doctrine," U.S. Army Aviation Digest, November 1986, p.9.
3. Shoffner, p. 8.
4. Richard Simpkin, Race to Swift, p. 120.

CHAPTER V

AIRLAND BATTLE AND AIR MANEUVER

Operational deployment of air maneuver should be considered in the context of AirLand Battle doctrine. The litmus test is to bounce the principle features of air maneuver against the four Airland Battle tenets. For doctrinal validity, air maneuver characteristics should enhance and support the objectives of Airland Battle. We must consider also that the battlefield must be viewed as three dimensional, with the air dimension as the third dimension. The dimensions cannot be isolated, so operations in one dimension must be coordinated with operations in the other. Moreover, both ground and air operations must fully support the scheme of maneuver to achieve an integrated battle plan.

Initiative

"Initiative means setting or changing the terms of battle by action."¹ Once achieved, initiative is maintained at the operational level through anticipation, planning, and continued pressure on the enemy. We want to force the enemy to react by presenting him with rapidly changing situations, ultimately obliging him to conform to our tempo. But how do we accomplish that? Translating the concept of initiative to reality on the

battlefield requires "surprise in selecting the time and place of attack; concentration, speed, audacity, and violence in execution; the seeking of soft spots; flexible shifting of the main effort; and prompt transition to exploitation."² Inherent in each of these requirements is the need for superior mobility. As we have noted, the physical limitations imposed on ground systems have resulted in a virtual stalemate in mobility capability. Even so, commanders can still attain local superiority in maneuver through the adept use of terrain and tactics. Over the past decade ground system mobility has improved significantly. In the close battle, the M-1 Abrams tank and the Bradley Fighting Vehicle should fare nicely against their Soviet counterparts, so they are well suited for a localized role in the heavy tactical fight. But successful deep maneuver at the operational level requires clear superiority of the maneuvering system over its adversary. Without it, the commander runs a high risk of overextending his forces and becoming outflanked himself. To achieve this superiority in mobility, particularly at the depth and pace desired, we must turn to a new vehicle and a new dimension. The helicopter's maneuverability, speed, and survivability make it equal to the task, providing the commander with an excellent tool for seizing and maintaining the operational initiative.

Agility

"Agility - the ability of friendly forces to [set a faster pace] than the enemy - is the first prerequisite for seizing and holding the initiative."³ The non-linear, fluid, and rapidly changing battlefield places a premium on agility. "On such a battlefield, relative advantage in agility will be decisive."⁴ As we have seen, agility is one of the strongest characteristics of the helicopter. The alacrity and speed with which it moves provides the commander with the means to concentrate superior combat power at his choosing against weak points in the enemy's forces. Moreover, he has the flexibility to tailor each action independently and to repeat the actions in rapid succession. By doing so, he matches the strength of one system against the weakness of another. As opposing ground systems reach their limit in mobility, "(the) increase in relative agility must be achieved in part by greater and better integrated use of the third dimension of the battlefield."⁵

Depth

Without question, the depth at which Airland Battle must be executed gives rise to most controversy over whether the doctrine is executable with current equipment and weapons systems. Depth in the Airland Battle refers to the extension of operations in time, space, and resources.⁶ The tenet of depth is particularly

critical to operational level commanders as they must "employ maneuver, fires, and special operations to attack enemy units, facilities, and communications throughout the theater."⁷ Further, to achieve the purposes of Airland Battle these operations must be violent, unpredictable, and rapidly repeated to keep the enemy off balance and prevent him from taking effective counteraction.⁸ Currently, the upper echelons of the operational fight (Army and Army Group) rely almost solely on the ability of the Air Force to influence the fight at the depths required. While the operational commander at this level may continually seek - or strive to create - opportunities for deep maneuver (on the magnitude of the Inchon landing), his ability to do so is limited by a number of factors, not the least of which is supportability. Certainly, deep ground maneuver opportunities will not be numerous enough to allow the kind of continuous deep battle prosecution required by Airland Battle doctrine. Therefore, the Army or Army Group commander turns to the flexibility of the third dimension (Air Force Air Interdiction) to carry out the lion's share of the deep fight until an opportunity is presented for a decisive deep, large scale ground maneuver. At Corps, where the lower end of the operational level meets the upper spectrum of the tactical fight, the distances are reduced but the situation is similar. In rare instances the factors of METT-T may make deep ground maneuver feasible and desirable, but again the opportunities will not be sufficient to meet the requirement for a continuous deep fight. Currently, the

most effective and efficient way to reach the required depths with the frequency needed to keep the enemy off balance is through the third dimension. Although the Corps commander will nominate deep targets to be interdicted by Air Force strike packages, these strikes do not offer him the total control, flexibility, precision, or impact that can be achieved through deep air maneuver and attack by an Apache/AHIP force package. By using these air maneuver assets, the Corps commander can influence the deep battle, control the flow of forces into the close fight, and ultimately shape the picture at the operational level.

Synchronization

The principle of synchronization is probably the least understood tenet of Airland Battle doctrine, but in a scenario that envisions a numerically superior enemy, it could be the most important. Synchronizing the fight in space, time, and purpose requires imagination and an understanding of unit and systems capabilities. The flexibility of air maneuver elements not only increases synchronization, it enhances the process. In his operational role, the corps commander must envision how he wants the battle to evolve and work toward synchronizing all battlefield activities in order to gain maximum benefit from the whole. This includes synchronization of the air and ground dimensions as well. This involves timing and requires proper use

of the inherent strengths of each dimension. By taking advantage of the speed of aviation forces, the commander can achieve rapid massing at critical points, thus masking friendly action and intentions while maintaining the synchronization of activities. Freedom of maneuver enables aviation elements to execute a number of diverse missions. Finally, and perhaps most importantly, the operational level commander must synchronize the rear, close, and deep battles. The range offered by air maneuver enables the commander to plan his synchronization in depth. Furthermore, the control he exercises over his assigned aviation forces provides assurance that synchronization plans will not be disrupted by higher priority missions, as might occur with Air Force Battlefield Air Interdiction (BAI).

ENDNOTES

1. Department of The Army, Field Manual 100-5, p.15 (hereafter referred to as "FM 100-5").
2. Ibid.
3. Ibid., p.16.
4. Wilson A. Shoffner, MG, Employment of Combat Aviation, p.1.
5. Ibid., p.3.
6. FM 100-5, p. 16.
7. Ibid., p.17.
8. Ibid., p.14.

CHAPTER VI

AIR MANEUVER AS A COMPETITIVE STRATEGY

The theoretical value of striking deep behind enemy lines always has been recognized, especially by NATO war planners. Until recently, the practical ability to do so was restricted by difficulties in acquiring moving tank columns of reinforcing Soviet forces and, once acquired, attacking them with "dumb" munitions.

But with the advent of "smart" (precision guided) munitions and other emerging technologies of the past decade, it is now not only possible to acquire mobile targets deep in the enemy rear and to process target data in realtime, but also through the use of terminally guided submunitions, we can successfully attack these moving targets as well. Due largely to these emerging technologies, we must believe it is possible to hold the Soviet second strategic echelon at risk through conventional means.

However, as mentioned previously, many of these emerging technologies are extremely expensive and are still in developmental stages. Critics are quick to point out that a strategy based on troubled technologies may have devastating effects if the technology does not deliver as advertised. As we continue to explore and develop advanced technological systems, we should attempt also to exploit the advantages offered by

technologies that are already fielded.

Operational Fighting Assets

The Apache

Currently, the Third, Seventh, and Eighteenth Airborne Corps are fielded with AH-64 battalions. By 1991, each corps and most divisions will be Apache equipped. The AH-64, in conjunction with other systems currently available to the corps commander, offers the opportunity to conduct frequent attacks at operational depths, to exploit the advantage of current technologies, and to allow the integration of future technologies within the full context of AirLand Battle.

Most current writings about the attack helicopter focus on its employment in the tactical mode, when it augments ground forces in a close support role. The Apache provides the tactical level commander with obvious advantages which have accrued from a fifteen year evolutionary process in which the attack helicopter has been used as an anti-tank combat multiplier. However, the capabilities of the AH-64 with its night, marginal weather, navigational, visionics, and direct fire enhancements give the corps commander significant new operational level capabilities as well.

Employed at night, the attack helicopter is less vulnerable to the enemy's visual ability to acquire aircraft targets. The Apache is able to move to the battle area at NOE (Nap Of the

Earth) altitudes under complete blackout conditions. It can acquire, designate, and destroy its target from ranges greater than eight kilometers.

The heat signature of the Apache is extremely low, thereby virtually eliminating the effectiveness of heat seeking weapons. The aircraft is outfitted with IR suppressive paint, IR engine exhaust suppressors, an IR jammer, flares and chaff.

Likewise, the radar signature of the Apache is very low. But if the aircraft is detected, on board radar-jammers are extremely effective against any type of pulse radar - the type radar found on most Soviet and Warsaw Pact anti-aircraft weapons. Additionally, on board sensors inform the crew of the location, direction, and type radar in the area.

The Apache, teamed with the OH-58D (AHIP) for reconnaissance and security, and the UH-60 (Blackhawk) for command, control and logistics support, provide an awesome combination for operations at night and to depths of up to 120-130km. These depths are well within the operational commander's "area of interest." Until now they were beyond his "area of influence" with anything other than USAF battlefield air interdiction (BAI).¹ The Apache, coupled with other systems available to the corps, give the operational commander the ability to expand his "area of influence" through the medium of combat air maneuver.

Intelligence

Timely and accurate intelligence is critical to the deep battle. The Corps Commander must "see" deep into his "area of interest" to detect and locate enemy follow-on forces, C³ nodes, artillery, critical CSS locations, and other high value targets. He must also be able to assimilate and analyze this data in a timely manner and transmit it in useful form to the fighting units.

Corps assets available to accomplish this intelligence include photo reconnaissance, SLAR (Side Looking Airborne Radar) and infrared detection. Systems for locating non-communications emitters (QUICKLOOK) and for intercepting and locating communications emitters (GUARDRAIL) are fielded in the Corps Aerial Exploitation Battalion. The Corps also receives intelligence data from echelons above such as USAF AWACS, Naval and Marine Corps systems, satellite reconnaissance, and Allied support.

So the problem is not in the amount of intelligence available. Rather, the problem is in assimilating and analyzing the data in a timely fashion and then transmitting it in usable form. An innovative approach to this problem of intelligence fusion has been addressed by the Third U.S. Corps during a recent REFORGER exercise.

LTG Crosbie E. Saint, Commander III Corps, tasked his G-2 to look for a better way of managing intelligence data especially

as it pertains to the conduct of the deep battle. The result was a "Corps Troops Operation Center" where specific intelligence taskings are funneled into a single van equipped with down links, secure communications, and a "TACFIRE" terminal.

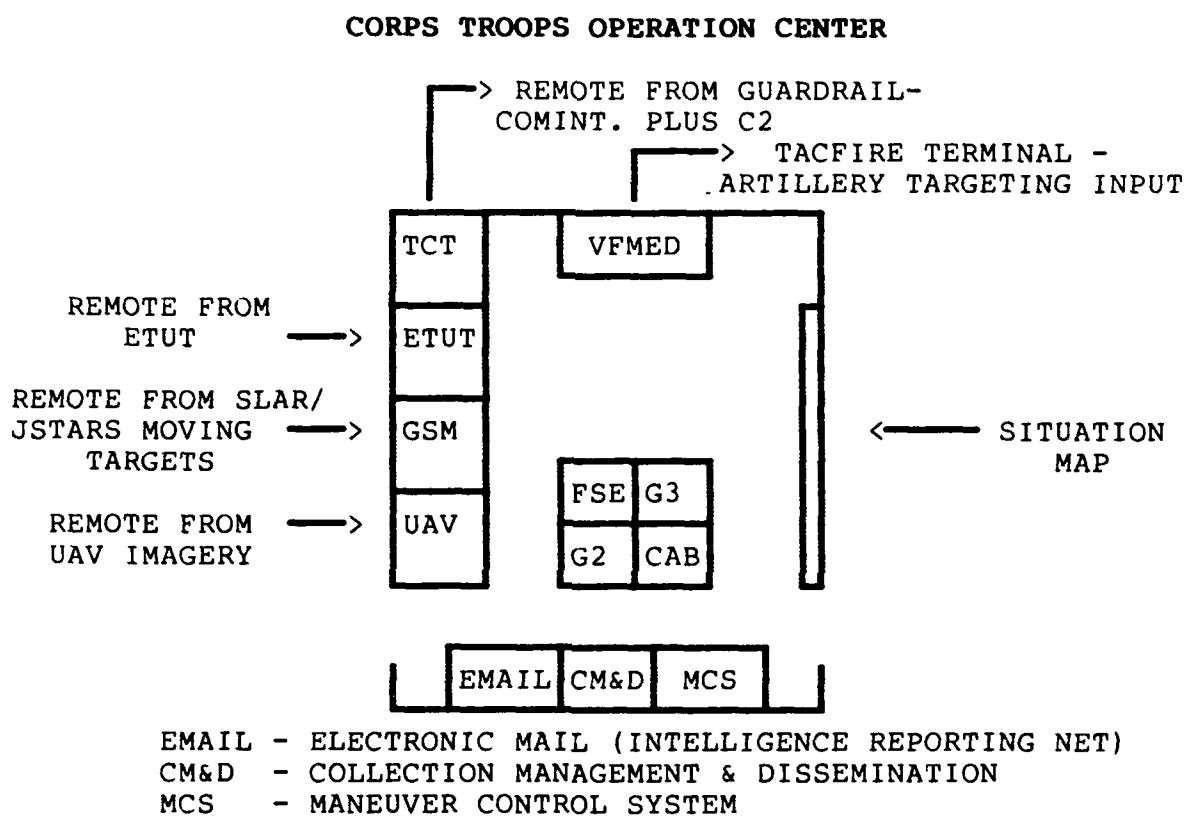


figure 1

Secure voice commo to the unit attacking deep is accomplished through the remote down link with GUARDRAIL called the "Tactical Control Terminal (TCT)." This link allows the most current information to be passed to the unit throughout the entire conduct of the mission. The van is manned by intelligence analysts, a FSE (fire support element) , the G-2, G-3, and the commander or the deputy commander of the Corps CAB. This

innovation proved extremely valuable during REFORGER. It enhances the commander's control of the deep battle and allows him to integrate third dimensional operations into the overall scenario.

Artillery

Artillery is always integrated in the deep attack. Artillery assets of 155mm, 8", and MLRS (Multiple Launched Rocket System) are found in the Corps Artillery. Their use in the deep battle is dependent on the range to the target, but with the MLRS ranges of greater than 30km and the advent of ATACMS ranges of greater than 100km, their use will become more common. Currently, artillery plays an important role in the suppression of enemy air defense (SEAD) to blast corridors if needed in the FEBA (Forward Edge of the Battle Area) to allow the passage of attack helicopter forces. Artillery can include not only corps assets but divisional and allied artillery assets as well.

Communicating with the artillery can sometimes be a problem. This is overcome, however, by the use of "digital message devices" (DMD) in the scout aircraft. Also with the advent of the AHIP (the OH-58D Advanced Scout Helicopter), the scouts will be able to designate for laser guided precision munitions further enhancing the accuracy of artillery in the target area.

At ranges in excess of the capabilities of the DMD, communication with supporting artillery can be accomplished

through the secure link of GUARDRAIL to the Corps Troops Operations Center and fed into TACFIRE by the FSE at that location.

An Operational Role in Battlefield Air Interdiction (BAI)

The Apache and the AHIP, with their laser designation capabilities, have significantly enhanced the performance and accuracy of the munitions and survivability of aircraft used in the BAI role. This has been one of the most unexpected areas of improvement. Through joint training exercises and the curiosity of Air Force pilots and Army aviators, we have discovered that an A-10, equipped with a laser acquisition capability (PAVE PENNEY), can deliver MAVERICK missiles and 30mm cannon with pin point accuracy without having to visually acquire the target first or over-fly the target area after weapons delivery. Instead, an Apache gunner can "trace" a target area, thereby allowing the A-10 pilot to simply follow the laser spot on his heads up display (HUD) and deliver deadly fire along a column of tanks without coming within range of enemy gunners.

Considerable training has been accomplished with the USAF, Navy and Marine Corps flying F-15, F-16, F-111, A-6, A-7, and AV-8 aircraft delivering all manner of laser guided munitions with outstanding results. Experience is showing that delivering very accurate ordinance at night, from stand-off altitudes and distances, is easily accomplished. Such capabilities enhance

combined operations.

Communication is easily accomplished through HAVE-QUICK capability, which offers secure UHF communication between Army and USAF aircraft in flight.²

The Corps Aviation Brigade (CAB)

The Corps CAB also represents a formidable potential maneuver capability in its own right. Employed integrally as an air maneuver formation, the Corps brigade...provides the Corps a significant capability to conduct sustained offensive air maneuver.³

The corps CAB is ideally suited to generate and apply combat power at the operational level. It has the attack assets (two to three AH-64 battalions) and the command and control to plan, coordinate, and conduct deep operations. It allows the Corps Commander to quickly gain and maintain the initiative by imposing on the enemy rapid, violent, unpredictable, and disorienting direct fires at critical points in the deep battle area.

How to Fight

The Deep Target

The first concern of the operational commander is to decide which targets are valuable enough to consider attacking deep. Some examples of high-value targets might include the OMG (Operational Maneuver Group) massing for movement in an assembly area, on a railhead, or in a road march; the airfield or pickup zone occupied by the heliborne OMG; a critical C³ node of a nuclear delivery system; critical CSS locations such as a POL storage site or an ammo dump; or groupments of artillery at the regiment, division, or Army.

Several targets or areas may be chosen and monitored simultaneously by the corps. The CAB is able to plan multiple missions; but once committed, it concentrates most of its assets towards its primary mission - the deep battle.

The Deep Battle Scenario

The decision to go deep has been made. The Corps Commander is especially concerned about the movement of a "New Type Army Corps" (NTAC) located approximately 170km east of the front. Intelligence indicates that this NTAC may be the lead elements of the OMG of the second echelon Army. Over the past two days, this unit has been moving by rail to a small village, off-loading, and

apparently conducting pre-combat checks. Intelligence analysts believe the unit may be ready for a road march towards the front within the next ten hours.

The IPB of available routes towards the front indicates two possible engagement areas for attack helicopter commitment. The areas are 100km and 120km from the FLOT (Forward Line of Own Troops) and are terrain bowls; they allow 4000 to 5000 meter shots with good road networks running southeast to northwest. There are several other areas where attack helicopters could be used, but these areas would restrict the number of helicopters able to fire simultaneously.

Figure 2 gives examples of distances, speeds, and time on station which reasonably could be expected on this sort of mission. The Attack Battalion would cross the FLOT as quickly as possible, penetrate to the target area at low level/contour altitudes, switch to "nap of the earth" (NOE) near the target, and then exit at low level/contour flight until across the FLOT.

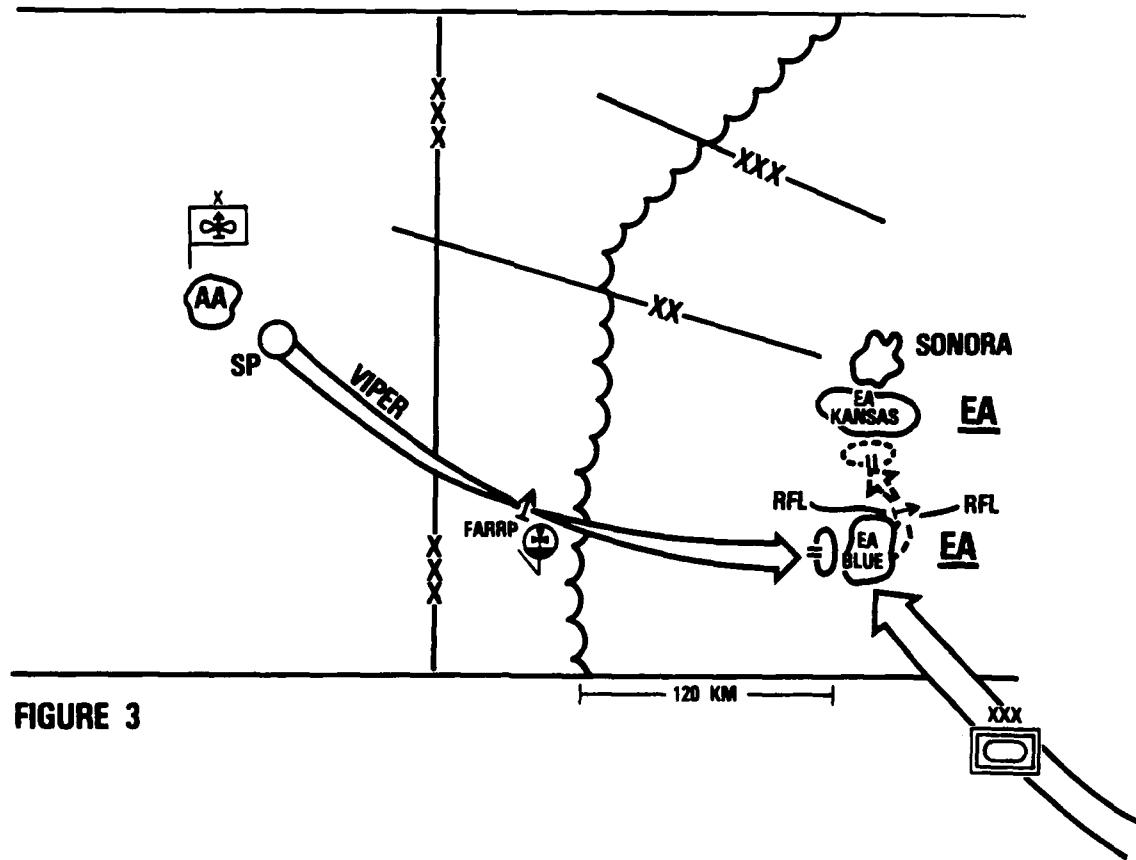
<u>DISTANCE</u>	<u>SPEED</u>	<u>INGRESS</u>	<u>TIME ON STATION</u>	<u>EGRESS</u>
100 KM	120 KNOTS	LOW LEVEL/ CONTOUR	NOE	LOW LEVEL/ CONTOUR
		26 MINS	60 MINS	26 MINS
120 KM	120 KNOTS	LOW LEVEL/ CONTOUR	NOE	LOW LEVEL/ CONTOUR
		33 MINS	46 MINS	33 MINS
150 KM	120 KNOTS	LOW LEVEL/ CONTOUR	NOE	LOW LEVEL/ CONTOUR
		43 MINS	26 MINS	43 MINS

figure 2

In the meantime, the corps CAB Commander assigns an attack battalion to each of the engagement areas with an on order mission to support the attack of the other battalion.

Preparations are made to cross the FLOT within the next six to eight hours, placing the time of crossing between 2400 and 0200 hours.

Given the movement times of the Soviet OMG, it should reach the edge of "EA Blue" (figure 3) between 0100 and 0300. The OMG has just passed a critical road junction which indicates it will move towards the northern most engagement area, located 120km from the FLOT.



The Corps Commander gives the go ahead for the attack helicopter battalion to be in its battle position NLT 0130. Because of the distance from the assembly area to the FLOT, the attack unit has located a FARRP (forward area rearm and refuel point) near the FLOT to facilitate refueling just prior to kickoff. A passage point has been coordinated in an area that is lightly defended, so the attack battalion will attempt to ingress by stealth.

A second attack route, battle position, and engagement area are planned along the route of travel of the enemy to facilitate continued orientation on enemy forces as opposed to terrain. The objective is to destroy as much of the armored force as possible, and to disrupt the momentum and tempo of the Soviet reinforcement, thereby turning the initiative for the close-in fight in favor of friendly forces.

As the attack battalion arrives in the battle position, the scouts report finding the trailing elements of the lead regiment passing through the northern edge of the engagement area. The attack battalion moves further north and the scouts take up positions to "designate" the enemy while the attack aircraft launch HELLFIRE missiles from covered positions six kilometers from the enemy formation. This type of attack is called indirect fire "lock on after launch" (LOAL).

The battalion continues its attack, integrating USAF F-16's in an advanced version of JAAT (joint air-attack team) called A-JAAT, designating for laser guided bombs dropped five miles from

the target area. The destruction of the enemy column is not complete, but it is devastating enough to halt its movement. The resulting "traffic jam" will cause trailing march units to bunch up, offering an additional lucrative target for attack helicopters or BAI.

Egress through friendly lines is accomplished on a different route than ingress to the target area. The planning and conduct of the return passage of lines is just as critical as the entry; it may include artillery to blast a SEAD corridor through enemy lines. Coordination with friendly ADA, air space management, and IFF (Identification Friend or Foe) procedures are accomplished through the corps air space management element (CAME).

The Counter-threat: Attacking the Heliborne OMG

During the initial airmobile and airborne operations, it is always better to kill the aggressor 'by dozens', while they are packed in the aircraft, than to fight the elite troops after they are dispersed on the ground.⁴ Col E. Albertsson, Swedish Army

Many commanders depend upon the mobility, firepower, and reaction time of the helicopter to provide an initial response to a "Level III" rear area threat. And certainly, if the enemy succeeds in surprising lightly defended logistics areas or

command and control centers in our rear, the helicopter can respond to that threat. But a response scenario means that the enemy has the upper hand: - he has caused us to react. The ideal situation is one in which we have the necessary intelligence and time to plan a combined arms attack of his heliborne formations before they can cross the FLOT. Ideally, this attack would occur in the enemy's rear while he is still on the ground.

Up to now, the US Army reaction to this kind of threat seemingly has been to ignore it or to place it in the category of a rear area or an air defense threat -- but not squarely in either. The result is a vague idea of how to counter this threat.

However, this type of threat is neither a rear area threat nor an air defense threat - it is a maneuver threat. Accordingly, countering this threat requires a maneuver response. Soviet heavy heliborne incursion into our rear area, with ground troops mounted on light armored vehicles and reinforced by fixed wing and attack helicopters, can be just as serious a threat to the friendly force as a armored ground maneuver force in the rear area. Once they have succeeded in landing, that portion of the battle may very well be lost.

Col Albertsson's guidance, indicates our first response to the heliborne "OMG" threat should be to seek it out and destroy its capacity for effectiveness while it is still in its own rear area. We have the intelligence capability to acquire and track helicopters in the enemy's rear. The range of responses, to

include deep attack, are evident and depend clearly on the situation at the time.

If we fail to engage the enemy heliborne OMG on its own turf, the "second best solution" would be to attack the formation enroute or on "short final" to the landing zone. In that context, we should address seriously the possibility of a combined arms defense against a heliborne threat and develop doctrine and procedures for just such a possibility. Here, also, the corps CAB is well suited for the mission.

IPB of the main and rear battle areas will reveal likely avenues of approach and likely battalion-size or larger landing zones near critical objectives. These should be easily prioritized, given the terrain and the "high-value" targets in our own rear area. Defense of this area can be planned and executed by the corps CAB commander, incorporating forward ground maneuver forces, air defense, artillery, CAS (Close Air Support), airmobile, and attack helicopter forces. The heliborne OMG must be attacked in depth with forward maneuver forces to deny the enemy the use of air corridors and air defense; we should attack with SHORAD and guns. Attack helicopter units can establish a heliborne screen along the approach routes, gain and maintain contact with the OMG, and maneuver to attack the formations along the flanks of the routes and as they approach the LZ's. The CAB's lift assets can move airmobile forces into blocking positions near the LZ's and direct ground maneuver forces, if available, into the contact.

The CAB commander has the capability to plan and coordinate this defense in advance. He should be able to execute the defense when the threat materializes.

The Soviet Response

The Soviet Army introduced the concept of the operational use of helicopters in 1979 or 1980 with the introduction of a (rotary wing) airborne assault brigade. However, in discussing the Soviets, Richard Simpkin, indicates "There seems no reason to suppose that ...the integration of helicopters has progressed as far as it has in the United States Army."⁵ He further comments the Soviets are in fact "falling back" in rotary wing technology, especially in the fields of avionics and visionics.

The high level of threat presented to our Warsaw Pact adversary by the modernized fleet of U.S. attack helicopters has caused him to alter his tactics in order to counter the threat - precisely the objective of Competitive Strategies Initiative. In a 1985 article in Soviet Military Review, Colonel Ivan Polyakov states "as the range of missions assigned to helicopters increases and their characteristics are improved, the task of anti-helicopter warfare acquires mounting importance."⁶ Polyakov then outlines how a Soviet maneuver battalion should organize to protect against the attack helicopter, which calls for attaching a platoon of portable anti-aircraft missile "complexes" along with a ZSU 23-4 platoon to the battalion. Thus, the potential

use of the attack helicopter has caused the enemy to inefficiently mass air defense forces for protection - exactly what we want him to do. Doctrine which advocates the use of the AH-64 as an operational level, deep attack weapon presents the adversary with yet another problem to counter. Thus we keep the enemy off balance and allow friendly commanders to gain and maintain the initiative. Developing credible offensive and defensive responses to the Soviet heliborne OMG threat can help ensure the initiative remains with NATO.

ENDNOTES

1. The Corps Commander operates at the lower spectrum of the operational level of war according to current AirLand Battle doctrine. Therefore, for the purposes of this paper, operational level and corps level are synonymous.
2. The HAVE-QUICK radio is an Air Force frequency hoping UHF radio installed in all USAF aircraft. It is their primary air-to-air secure communications. The same radio has been installed in all Apache, AHIP, and Blackhawk helicopters through a multi-service procurement program. By accident, Army crews discovered that through a simple manual encoding procedure, the Army can talk to USAF aircraft in flight through this secure link.
3. Shoffner, p. 4.
4. Erik Albertsson Col., "Defeating the Mi-24 HIND will Require a Team Effort", Armor, July/August 1987, pp. 47-48.
5. Simpkin, p. 47.
6. Ivan Polyakov Col., "Anti-helicopter Warfare," Soviet Military Review, March 1985, pp. 34-35.

CHAPTER VII

CONCLUSION

Changing the Mindset

Generally the hardest thing about adopting new ideas is getting rid of the old ones. Employment of the helicopter is certainly no exception. One needs only to look at the short history of rotary wing aviation to understand the difficulty. During the Vietnam conflict the helicopter was enormously successful and came into its own as a practical and efficient combat vehicle. Unfortunately, the lift helicopter was a means only to get to battle, and not a means of battle. Its mobility was never exploited on a grand scale. And the attack helicopter was a means only of fire support, not a means of combat maneuver which could set operational tempo. It served only in a reactive mode. Ironically, these old ideas and concepts hang on because they were so successful. And successful commanders from that era are still around to remember them. But if we are to progress in our tactical and operational thinking, we must leave outmoded concepts behind.

Helicopter technology has advanced so rapidly that the only commonality of old to new is a rotor system. In contrast to the incremental way in which we "added on" to the old systems, our new systems are being built from the ground up, based on AirLand

Battle doctrine. These new weapons, with new capabilities, demand new employment techniques if we are to optimize their usefulness. Air maneuver is a good place to start.

Aviation as a True Maneuver Arm

"Army Aviation offers a great opportunity to corps and division commanders to dynamically turn inside that enemy commander's decision loop. Aviation can reach out and hit the enemy deep, where the attack is least expected, and do it quickly and effectively."¹

Let one thing be clear. The helicopter will no more replace the tank than the tank did the infantry. Rather, just as the tank did, it brings a new dimension to maneuver warfare. Properly employed, the unique characteristics of rotary winged weapons systems complement and enhance those of ground paced systems. This fact makes it critical that commanders integrate air assets into the ground scheme of maneuver - in advance.

Finally, we should note that early opponents of the tank were quick to point out its vulnerabilities without acknowledging its strengths. But the tank's potential was realized in World War II as its superior mobility was used to thrust deep into enemy territory and achieve rapid successes. The helicopter offers striking similarities in its development, with one notable exception: we have not experienced a large conventional conflict in which to test concepts of the third tier of mobility and the

ability to set operational tempo through air maneuver. Should we wait until then?

ENDNOTES

1. Ostovich, Rudolph III, BG, "Airland Battle," U.S. Army Aviation Digest, November 1986, p. 9.

BIBLIOGRAPHY

1. Albertsson, Erik, Col. "Defeating the Mi-24 HIND Will Require a Team Effort." Armor. Jul/Aug 1987. 47-48.
2. Algarotti, Bob. "REFORGER: Apache Gets its Feet Wet in Europe." Rotor & Wing International. Feb 1988. 48-65.
3. Bavaro, Edward J. "Closing the Window." U.S. Army Aviation Digest. Jan 1986. 10-15.
4. . "The OMG - One Tough Proposition." U.S. Army Aviation Digest. Apr 1985. 33-37.
5. Brown, Frederic J, MG. "Attack Helicopter Operations on the Heavy Battlefield." U.S. Army Aviation Digest. Jul 1985. 2-11.
6. Carlucci, Frank C. Report of the Secretary of Defense Frank Carlucci to the Congress on the Amended FY 1988/FY 1989 Biennial Budget. Washington: U.S. Department of the Defense, 18 February 1988.
- Cover title: Annual Report to the Congress Fiscal Year 1989.
7. Gay, Mark P. Maj. "Then and Now - Fighting It Out at Operational Depths." Field Artillery Journal. Jan/Feb 1986. 33-39.
8. Gilson, Charles. "Helicopter Air-to-Air Combat: The US Army faces the inevitable." International Defense Review. Jan 1986. 81-86.
9. Harvey, David. "A Comeback Story: The OH-58D Aeroscout." Rotor & Wing International. Feb 1988. 44-46.
10. House, John M. Maj. "Fire Support Tactics for Rear Operations." Field Artillery Journal. Mar/Apr 1987. 21-25.
11. Joint Chiefs of Staff. United States Military Posture FY 1988. (Military Posture statement prepared by the Joint Staff to supplement testimony by the Chairman and other members of the Joint Chiefs of Staff at congressional hearings in support of the Fiscal Year 1988-89 Defense Budget).
12. Kemp, Ian. "NATO in the '90s: Finally, the Chopper Comes of Age." Defense & Foreign Affairs. Feb 1987. 22-23.

13. Lindsay, James J. LTG. "Operational Maneuver." U.S. Army Aviation Digest. May 1986. 2-6.
14. Lopez, Ramon, Bill Sweetman, Greg Waskul, Germain Chambost, Robert Salvy, and Gerard Turbe. "Anti-tank Helicopters." International Defense Review. May 1987. 603-613.
15. Mann, Paul. "Competitive Strategies Doctrine Pushed By Defense Dept. for Post-INF Planning." Aviation Week & Space Technology. 1 Feb 1988. 25-29.
16. McGinty, Kenneth R. LTC. "Attack Helicopters in the 6th Cavalry." Defense Helicopter World. April 1986.
17. _____ and 1Lt. Eduardo Gutierrez. "A-JAAT." U.S. Army Aviation Digest. Feb/Mar 1987. 33-35.
18. _____ and Cpt. Gregory A. Brockman. "Cross FLOT with the AH-64 Apache." U.S. Army Aviation Digest. Jan 1987. 2-5.
19. Ostovich, Rudolph III, BG. "Air-land Battle." U.S. Army Aviation Digest. Nov 1986. 2-9.
20. Peters, Ralph, Cpt. "The Deep Attack Helicopter Raid." Armor. Mar/Apr 1985. 36-37.
21. Polyakov, Ivan, Col. "Antihelicopter Warfare." Soviet Military Review. No. 3:34-35. Mar 1985. 34-35.
22. Saint, Crosbie E, LTG. "Attack Helicopter: Close Operations." Army Aviation. 31 Oct 1987. 2-65.
23. _____ . "Attack Helicopter Operations in the AirLand Battle: Deep Operations." 1987(?) [photocopy] unpublished article.
24. Shoffner, Wilson A. MG. "(Draft) White Paper: Employment of Combat Aviation." Nov 1986.
25. Simpkin, Richard. Race to the Swift. London: Brassey's Defense Publishers, 1985.
26. Staudenmaier, William O. "Deep Strike in US and NATO Doctrine." Defense & Foreign Affairs. Feb 1987. 28-31.
27. U.S. Department of the Army. "Army Aerial Scout Test and OH-58D (AHIP) Tactical Employment." Unpublished after action review of the test by CW2 Blaine D. Pendleton. May 1987.

28. U.S. Department of the Army. "Executive Summary (unclassified)." Army Aerial Scout Test - Phase I (AAST I). Aug 1987.

29. U.S. Department of the Army. FC 1-119: Corps Aviation Brigade. Jun 1987.

30. U.S. Department of the Army. FM 1-107: Air-to-Air Combat. 12 Oct 1984.

31. U.S. Department of the Army. FM 100-5: Operations. 5 May 1986.

32. U.S. Department of the Army. "U. S. Army Aviation Modernization Plan (AAMP)." Unclassified briefing, Dec 1987.

33. U.S. Department of Defense. Soviet Military Power 1987. Washington: Government Printing Office, March 1987.

34. Weinberger, Caspar W. Report of the Secretary of Defense Caspar W. Weinberger to the Congress on the FY 1986 Budget, FY 1987 Authorization Request and Fy 1986-90 Defense Programs. Washington: U.S. Department of Defense, 4 February 1985.

Cover title: Annual Report to the Congress Fiscal Year 1986.

35. Report of the Secretary of Defense Caspar W. Weinberger to the Congress on the FY 1988 Budget and FY 1988-92 Defense Programs. Washington: U.S. Department of Defense, 12 January 1987.

Cover title: Annual Report to the Congress Fiscal Year 1988.

END

DATED

FILM

8-
DTIC